

CLAIMS

1. A computer-implemented display system for visualizing the effect of selected values of a plurality of design variables on a plurality of performance attributes, said display system comprising:
 - a processor having an input for accepting instructions and an output for driving a visual display;
 - a plurality of control graphs generated on said display using said output of said processor, at least one of said control graphs illustrating an effect of a first design variable on a first performance attribute;
 - a plurality of performance graphs generated on said display using said output of said processor, at least one of said performance graphs showing a relationship between said first performance attribute and a second performance attribute;
 - a plurality of decision graphs generated on said display using said output of said processor, at least one of said decision graphs showing a relationship between said first design variable and a second design variable; and
 - a design-interface coupled to said input of said processor, said design-interface enabling a user to manipulate said first design variable to control said first performance attribute.
2. The computer-implemented display system of claim 1 wherein said design-interface is a graphical user-interface.
3. The computer-implemented display system of claim 2 wherein said graphical user-interface comprises a scroll-bar having a user-adjustable slider and a value of said first design variable changes in response to movement of said adjustable slider.
4. The computer-implemented display system of claim 1 wherein said design-interface comprises a field into which a designer enters a value for said first design variable.

5. The computer-implemented display system of claim 1 wherein said first design variable is a random variable and said design-interface enables a designer to specify a probability distribution of said first design variable.
6. The computer-implemented display system of claim 1 further comprising a specification-interface coupled to said plurality of performance graphs, said specification-interface enabling a designer to specify a range of permissible values for said first performance attribute.
7. The computer-implemented display system of claim 6 wherein said specification-interface further comprises a designer-preference interface for enabling a designer to assign a weight to said first performance attribute, thereby indicating an importance of said first performance attribute relative to said second performance attribute.
8. The computer-implemented display system of claim 6 wherein said first performance attribute is a random variable and said specification-interface enables a user to specify a probability distribution associated with said first performance attribute.
9. The computer-implemented display system of claim 1 wherein said plurality of control graphs is disposed in an array.
10. The computer-implemented display system of claim 9 wherein said array is a rectangular array of rows and columns, each row being associated with a performance attribute and each column being associated with a design variable.
11. The computer-implemented display system of claim 1 wherein said at least one control graph displays an indication of allowable values of said first design variable.
12. The computer-implemented display system of claim 1 wherein said at least one performance graph depicts a region of permissible values for said first and second performance attributes.
13. The computer-implemented display system of claim 12 wherein said region has a

boundary representative of a Pareto optimal set of permissible values of said first and second performance attributes.

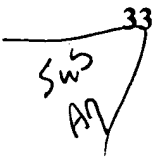
14. A method of visualizing the effect of selected values of a plurality of design variables on a plurality of performance attributes, said method comprising:
 - displaying a plurality of control graphs, at least one of said control graphs illustrating an effect of a first design variable on a first performance attribute;
 - displaying a plurality of performance graphs, at least one of said performance graphs showing a relationship between said first performance attribute and a second performance attribute;
 - displaying a plurality of decision graphs, at least one of said decision graphs showing a relationship between said first design variable and a second design variable;
 - manipulating said first design variable to control said first performance attribute; and
 - updating said at least one performance graph and said at least one decision graph in response to said manipulation of said first design variable.
15. The method of claim 14 wherein said manipulating said first design variable comprises manipulating an element of a graphical user-interface.
16. The method of claim 15 wherein said manipulating an element of a graphical user-interface comprises sliding a user-adjustable slider on a scroll-bar.
17. The method of claim 14 wherein said manipulating said design variable comprises entering a value for said first design variable in a text field.
18. The method of claim 14 wherein said manipulating said first design variable comprises specifying a probability distribution of said first design variable.
19. The method of claim 14 further comprising specifying a range of permissible values for said first performance attribute.
20. The method of claim 14 further comprising assigning a weight to said first performance attribute, thereby indicating an importance of said selected

performance attribute relative to said second performance attribute.

21. The method of claim 19 further comprising specifying a probability distribution associated with said first performance attribute.
22. The method of claim 14 further comprising disposing said plurality of control graphs in an array.
23. The method of claim 14 further comprising disposing said plurality of control graphs in a rectangular array of rows and columns, each row being associated with a performance attribute and each column being associated with a design variable.
24. The method of claim 14 further comprising displaying, on said at least one control graph, an indication of allowable values of said first design variable.
25. The method of claim 14 further comprising displaying, on said at least one performance graph, a region of permissible values for said first and second performance attributes.
26. The method of claim 14 further comprising displaying, on said at least one performance graph, a region of permissible values for said first and second performance attributes, said region having a boundary representative of a Pareto optimal set of permissible values of said first and second performance attributes.
27. A computer-readable medium having encoded thereon software for visualizing the effect of selected values of a plurality of design variables on a plurality of performance attributes, said software comprising instructions for:
 - displaying a plurality of control graphs, at least one of said control graphs illustrating an effect of a first design variable on a first performance attribute;
 - displaying a plurality of performance graphs, at least one of said performance graphs showing a relationship between said first performance attribute and a second performance attribute;
 - displaying a plurality of decision graphs, at least one of said decision graphs showing a relationship between said first design variable and a second design variable;

manipulating said first design variable to control said first performance attribute; and

updating said at least one performance graph and said at least one decision graph in response to said manipulation of said first design variable.

28. The computer-readable medium of claim 27 wherein said instructions for manipulating said first design variable comprise instructions for manipulating an element of a graphical user-interface.
29. The computer-readable medium of claim 28 wherein said instructions for manipulating an element of a graphical user-interface comprise instructions for sliding a user-adjustable slider on a scroll-bar.
30. The computer-readable medium of claim 27 wherein said instructions for manipulating said design variable comprise instructions for entering a value for said first design variable in a text field.
31. The computer-readable medium of claim 27 wherein said instructions for manipulating said first design variable comprise instructions specifying, a probability distribution of said first design variable.
32. The computer-readable medium of claim 27 wherein said software further comprises instructions for specifying, a range of permissible values for said first performance attribute.
33.  The computer-readable medium of claim 27 wherein said software further comprises instructions for assigning, a weight to said first performance attribute, thereby indicating an importance of said selected performance attribute relative to said second performance attribute.
34. The computer-readable medium of claim 32 wherein said software further comprises instructions for specifying a probability distribution associated with said first performance attribute.
35. The computer-readable medium of claim 27 wherein said software further comprises instructions for disposing said plurality of control graphs in an array.

36. The computer-readable medium of claim 27 wherein said software further comprises instructions for disposing said plurality of control graphs in a rectangular array of rows and columns, each row being associated with a performance attribute and each column being associated with a design variable.
37. The computer-readable medium of claim 27 wherein said software further comprises instructions for displaying, on said at least one control graph, an indication of allowable values of said first design variable.
38. The computer-readable medium of claim 27 wherein said software further comprises instructions for displaying, on said at least one performance graph, a region of permissible values for said first and second performance attributes.
39. The computer-readable medium of claim 27 further comprising instructions for displaying, on said at least one performance graph, a region of permissible values for said first and second performance attributes, said region having a boundary representative of a Pareto optimal set of permissible values of said first and second performance attributes.

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